DOCUMENT RESUME

ED 173 727 CG 013 634

AUTHOR Schlichter, K. Jeffrey; Horan, John J.
TITLE Effects of Stress Inoculation Training on the Anger Management Skills of Institutionalized Juvenile Delinquents.
PUB DATE Apr 79
NOTE 27p.; Paper presented at the Annual Meeting of the American Educational Research Association (San Francisco, California, April 8-12, 1979)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Aggression; *Behavior Change; *Coping; *Delinquents; *Institutionalized Persons; Modeling (Psychological); Rehabilitation Programs; Role Playing; *Therapy; Verbal Communication
IDENTIFIERS *Stress Inoculation

ABSTRACT

Although the problem of aggression generates considerable social concern, aggressive delinquents are rarely provided with more than minimal treatment following legal processing and incarceration. When treatment is available, it usually consists of some form of ineffective or even counterproductive punishment administered in the context of a token economy. To see if a more useful approach to the treatment of juvenile delinquent aggression is possible, 27 institutionalized male delinquents evidencing verbal and physical aggression in response to anger provocations were exposed to one of three experimental conditions: no treatment (NT), consisting only of pre- and posttreatment assessment; stress inoculation (SI), including provision of an educational rationale, coping and self-instructional skills training, therapist modeling and rehearsed practice of non-aggressive responses to provocations; and treatment elements (TE), involving a regimen of relaxation training and rehearsed practice of non-aggressive provocation responses. Only SI was effective in decreasing verbal aggression exhibited during laboratory role play provocations. Implications of cognitive behavior therapy techniques in treating anger control problems of delinquents are discussed. (Author/IS)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED173727

EFFECTS OF STRESS INOCULATION TRAINING ON THE ANGER MANAGEMENT SKILLS OF INSTITUTIONALIZED JUVENILE DELINQUENTS

K. Jeffrey Schlichter

Some Other Place, Inc.

John J. Horan

The Pennsylvania State University

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

K. Jeffrey Schlichter

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC) AND USERS OF THE ERIC SYSTEM."

Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco, April, 1979

CG013634

EFFECTS OF STRESS INOCULATION TRAINING ON THE ANGER MANAGEMENT SKILLS OF INSTITUTIONALIZED JUVENILE DELINQUENTS

Although the problem of agression generates considerable social concern, aggressive delinquents are rarely provided with more than minimal treatment following legal processing and incarceration (Russell and Harper, 1974). Furthermore, treatment, when available, usually consists of some form of punishment administered in the context of a token economy (Brown and Tyler, 1968; Burchard, 1967; Burchard and Tyler, 1965; Fineman, 1968; Phillips, 1968).

Unfortunately, such punishment may be ineffective, if not counterproductive. Although aggression is often considered "impulsive," in point of fact it might be more appropriately viewed as a terminal behavior in a chain of responses which occur following an anger provocation. Intermediate responses which lead to aggression may include, for example, high autonomic arousal and cognitions such as "I am not a man if I don't put this (insulting peer) in his place." Punishment, while temporarily suppressing the aggressive response, would have no effect on the preceeding cognition and may actually increase autonomic arousal.

Perhaps a more useful approach to the treatment of juvenile delinquent aggression would involve various forms of cognitive restructuring and coping-skills training directed toward the reduction of autonomic arousal and the development of alternative responses to provocation stimuli. Coping-skills training has already been successfully applied to anger-control problems in non-delinquent populations including alcoholics (Hartman, 1973), distressed families (Smith, 1973), automobile drivers (Rim, DeGroot, Boord, Heiman, & Dillow, 1971), racially prejudiced Whites (O'Donnel and Worell, 1973), adolescents (Kaufman and

Wagner, 1972), and hyperactive children (Goodwin and Mahoney, 1975).

"Stress inoculation," a term coined by Meichenbaum (1978; Meichenbaum and Turk, 1976), is a conceptually clear and empirically promising three-phase paradigm for enabling aggressive delinquents to respond more appropriately to provocative stimuli. In phase 1 clients are educated about anger and aggression, specifically, the causes, consequences, and alternative methods of control. Phase 2 involves training in a diverse array of relevant coping skills. Finally, in phase 3 clients receive practice in applying these coping skills during exposure to simulated provocative situations.

In the field of pain management stress inoculation has been subjected to extensive and positive experimental scrutiny (Horan, Hackett, Buchanan, Stone, and Demchik-Stone, 1977; Hackett, Horan, Buchanan, and Zumoff, 1978; Hackett and Horan, 1979), but only one study by Novaco (1975) has explored the effects of stress inoculation on maladaptive anger. Since Novaco's project involved volunteer adults, the relevance of stress inoculation to the treatment of institutionalized aggressive delinquents has yet to be demonstrated.

Experimental treatment investigations in correctional facilities require control considerations not present in laboratory settings. For example, institutional policy and our professional preferences ruled out the use of a theoretically inert placebo procedure. Instead, we compared stress inoculation with two other conditions: (1) a no treatment control (the traditional treatment in most such settings!), and (2) a "treatment elements" condition which generated equivalent experimental demands but left out certain key ingredients of stress inoculation.

Comparisons between the no treatment control and the two active treatment conditions would reflect, in a crude sense, the practical utility of stress inoculation. Moreover, a partial component analysis of stress inoculation would be accomplished by comparing the stress inoculation and treatment elements conditions.

METHOD

Subjects

All subjects were adjudicated male delinquents between the ages of 13 and 18 who were committed for an indefinite term to a correctional facility in northeastern U.S.A., and who met the following two criteria: (1) preinstitutional history of verbal and/or physical aggression, and (2) nomination by two independent youth workers as exhibiting significant anger-control problems within the institution. The 40 most difficult youths were invited by the first author to participate in a treatment program to reduce aggressive behavior following anger provocations. Thirty-eight subjects volunteered and were then offered $1.00 per treatment session. Of these, 36 were initially randomly assigned to one of the three treatment conditions; however, drop-outs, runaways, and discharges from the institution resulted in usable data for 10 stress inoculation, 8 treatment elements, and 9 no treatment subjects.

Measures

The subjects were assessed individually two weeks prior to treatment and two weeks following treatment termination. All data was collected by two experimentally blind female undergraduate assistants who had field placement experience in that institution. The following measures were employed:

1. Anger Inventory. This experimental 80-item instrument was developed to assess anger responses to 13 categories of events commonly observed to be anger provoking for delinquent boys (e.g., denial of reinforcement, accusation of wrongdoing). Detailed examples from each category were presented via audiotape to the subjects who then indicated on a 5-point scale how angry they would become if they were actually involved in each situation. Scores on the inventory could thus range from 80 to 400, with high scores indicating much anger. Spearman-Brown (Winer, 1972, p. 127) split half reliability estimates on the pre- and posttest were .969 and .986 respectively.

2. Imaginal Provocation Test. This measure was derived from Novaco (1974). Following imagery training with neutral scenes, the subjects listened to descriptions of anger inducing events while they closed their eyes and imagined themselves actually in those situations. The same two scenes were used for pretest and posttest; two additional scenes served as a generalization test. The specific scenes, however, were counterbalanced such that half of the subjects were pre- and posttested on the generalization scenes given to the other half. Following each scene the subjects rated the degree of anger they experienced on a 5-point scale. Data from the two scenes comprising the pretest, posttest, and generalization measures were summed, yielding a single score for each test; high scores indicated much anger.

In addition to providing an anger rating for each scene, the subjects were asked to choose from among seven possible responses a behavior that they would in fact do, and a behavior they would like to do (if different). These seven possible responses varied along the dimensions

of verbal and physical aggression and were scored accordingly. High scores on this device represented high aggression.

4. Role Play Provocation Test. Each subject interacted with an experimentally blind assistant under the instructions to behave as though the role played events were actually occurring (short of assault or property damage). As with the imaginal provocations test, the same two scenes were used for pretest and posttest, with two additional scenes comprising a generalization measure. Again, half the subjects were pre- and posttested on the generalization scenes used by the other half. One of the scenes always involved a peer accusation, the other a command by a disliked youth worker. The assistants' scripts of course remained invariant; the subjects, on the other hand, were provided with their first four lines and instructed to continue roleplaying on their own. Two independent, trained, experimentally blind judges reviewed audiotapes of these roleplayed situations in random order and rated each subject's expressed verbal aggression using the aforementioned "seven possible responses" as a scoring guide. Judges agreed on 96% of their ratings; in cases of disagreement the rating expressing the higher level of aggression was used in the analysis.

5. Irrational Beliefs Test. This 100-item measure was developed by Jones (1969) from rational-emotive theory. It was administered in this study via audiotape and with a modified answer format, as many subjects had reading skill deficiencies. We expected this test to reflect potential generalized changes in beliefs. Higher scores represent lesser rationality.

6. Institutional Behavior Ratings. In order to determine if

treatment effects were apparent in the subjects' institutional environment, two randomly selected, experimentally blind youth workers completed behavior ratings on all subjects prior to and after treatment. One set of 10 items focused on the subjects' specific verbal and physical responses to anger provocations. Higher scores on these measures indicated greater aggression. Data from the ratings of subjects' verbal responses to anger provocations was summed, yielding one score, and physical response ratings were summed to produce a second score. Another set of 14 items dealt with more global adjustment issues such as attitudes toward staff and handling of daily responsibilities. Lower scores on these items represented poorer adjustment. Data for each of the 14 items was analyzed separately; in addition a total score was obtained by collapsing the scores across all items.

7. Experimental Demand Assessment. As a check on the possibility that the two active treatment conditions generated different demand characteristics, two 9-item rating scales (which determined the subjects' liking of the experimenters, belief in the potential efficacy of the treatment, and desire to continue treatment) were administered after the third and tenth sessions.

Procedure

After random assignment to the treatment conditions, the subjects were again randomly assigned to one of three male experimenters, each of whom worked with an approximately equal number of subjects under each treatment condition. All three experimenters were advanced doctoral students in clinical psychology.

The subjects were seen in hourly sessions, twice a week over a

5-week period. Due to institutional scheduling requirements time between sessions ranged from 24 to 96 hours. The initial session consisted of rapport-building, defining anger as a combination of particular autonomic sensations and thoughts, helping subjects recall recent anger experiences, identifying specific anger provoking events within each of these occurrences, and recalling specific covert and overt responses to their anger. Subjects were asked to attend to and report any anger experiences between the first and second sessions.

The first half of the second session reviewed subjects' recent anger provocation encounters and introduced self-monitoring as an effective means of learning more about one's anger responses. Self-monitoring of between-session anger experiences was assigned at the end of each remaining session. Reported anger experiences were categorized with the subjects, and all 13 categories represented in the anger inventory were discussed. A 6-item hierarchy of most to least anger provoking types of experiences was constructed with the subject and recorded. Specific treatment procedures are as follows:

Stress Inoculation. The second half of the second session introduced an extensive educational rationale, with emphasis on autonomic and cognitive components of anger arousal. Therapists overtly attributed to subjects the ability to learn better self-control and told them that the next session would present alternatives to aggression following anger arousal.

The third and all subsequent sessions began with a review of work of previous sessions. A 6-step coping strategy for anger management was presented in the third session. This strategy stressed the importance

of: (1) identifying and remembering what kinds of events arouse one's anger so that one can immediately recognize aggression-eliciting situations; (2) when it is recognized they are about to occur, preparing for such events via self-instruction to remain calm; (3) continuing to instruct oneself to remain calm and rational while actually confronting an anger provocation; (4) during an anger-arousing event, using autonomic responses as cues to employ one or more coping mechanisms designed to reduce the intensity of angry feelings-(e.g., relaxing oneself quickly; performing a numerical counting task; imagining involvement in a preselected pleasant experience); (5) exhibiting three specific overt behaviors including deciding what to say and saying it, looking the other person directly in the eyes or face, and emitting one's response assertively, without either yelling or whispering; and, finally, (6) giving oneself positive reinforcement (via covert self-statements) for effectively handling the situation. The remainder of the third session consisted of practice of steps (2) and (3) above and relaxation training.

In session four, the therapist demonstrated use of self-instruction in confronting a specific situation from one of the subject's hierarchy types. Having selected one of the coping mechanisms presented in step (4) above, subject and experimenter role played an anger provocation, with the subject playing provoker, and the experimenter responding and modeling steps (1) through (4) of the coping strategy.

Using examples from the subject's hierarchy, the therapist modeled steps (5) and (6) in session five. The subject was then asked to role play a provoker, with the therapist responding initially by role playing

a non-coping aggressive response, then a response employing the coping strategy but with some errors, then a mastery response with no errors. The subject, in turn, began his practice of each step of the coping strategy, with the therapist role playing the provoker and coaching the subject in his coping responses. Subjects rehearsed different numbers of steps, depending upon individual rates of progress.

Sessions 6 through 10 consisted of rehearsed practice of all coping skills through role play of provocation encounters within each category type in the subject's hierarchy. These role plays required both subject and experimenter to play provoking and provoked roles. The experimenter modeled both coping and non-coping anger responses and coached the subject until he was able to proceed through his hierarchy by responding assertively but nonaggressively to each item. Throughout the 10 sessions therapists challenged subjects' irrational beliefs about anger, helped them prepare for the probability that their coping strategies would not be effective in all situations, and encouraged them to apply what they had learned to between-session anger experiences in the institution and to practice relaxation exercises.

Treatment Elements. The second half of the second session was initiated by the experimenter's statement that the best way to learn how to control one's temper was to talk more about events that elicited anger and to practice imagining them happening while not allowing oneself to become angry. The session continued with detailed discussion of examples of the type of provocation specified at the bottom of the subject's hierarchy. Finally, subjects were informed that they would be given imagery training and opportunities to imagine being provoked in ways

indicated by their hierarchies and to practice responding nonaggressively to these situations.

The third and all remaining sessions began with a review of work of previous sessions. The subject was then given imagery training, followed by role playing of a provocation encounter represented by the lowest hierarchy item. While the experimenter role played a provoker, he actively encouraged the subject to respond nonaggressively. After 15 minutes of role play practice, the subject was given relaxation training with the overt rationale that learning how to relax often helps people not to become angry in provoking situations. Between-session practice of relaxation techniques was encouraged at the end of this and each subsequent session.

The 4th through 10th sessions included: (1) helping subjects to visualize provocations within each successive hierarchy type; (2) role playing each imagined scene several times, with the therapist playing the provoker while encouraging the subject to respond nonaggressively; (3) practicing relaxation; (4) assigning the subject between-session self-monitoring, relaxation practice, and attempts to respond nonaggressively to anger provocations. This group was given no explanation of anger arousal, no introduction to the notion or practice of making self-statements, no presentation or modeling by the experimenter of behavioral alternatives to aggression, and no introduction to the notion of coping strategies.

No Treatment Control. These subjects were given all pretreatment measures and informed by the first author that they would be seen in a few weeks for another evaluation. They received no additional contact

prior to initiation of posttreatment assessment.

RESULTS

Preliminary Analysis

Experimental mortality was roughly equal across treatment conditions and judged not to be systematically influenced by any particular treatment condition. Table 1 presents the means and standard deviations of pretest-posttest raw scores and residual gains produced by each treatment condition. A gain is residualized by expressing the posttest score as a deviation from the posttest-on-pretest regression line (Cronbach and Furby, 1970; Dubois, 1957). Means and standard deviations of raw scores for posttest-only measures are also included in Table 1. Treatment effects were evaluated either by ANOVA's of residual gains (in the former case) or by ANOVA's of posttest data (in the latter case). Significant F values were followed by the Newman-Keuls procedure. Additionally the Bartlett's test for homogeneity of variance was found to be insignificant on all dependent measures.

Insert Table 1 about here

Treatment Effects

Anger Inventory. None of the three treatment conditions were found to have had a differential impact on the residual gain scores derived from this measure.

Original Provocations. The ANOVA conducted on the residual gains derived from the anger ratings on this measure yielded a significant treatment effect, F (2, 24) = 5.85, $p < .008$. Post hoc analysis

revealed that both active treatments produced significant decreases in anger relative to the no treatment control subjects ($p < .05$); however, they did not differ from each other. There were no differences between the three treatment groups on the posttest generalization measures.

Four behavioral choice measures were also derived from the imaginal provocations test. A residual gain ANOVA on the in fact aggressive verbalization data yielded a significant treatment effect, F (2, 24) = 6.80, $p < .004$, which, when followed up, again revealed that both active treatments improved more than the no treatment control ($p < .05$) but were not significantly different from each other. No treatment effects were found on the other three behavioral choice measures. Again, none of the three treatment conditions were found to have had a differential impact on the posttest generalization behavior choice measures.

Role Play Provocations. A 3 X 2 (treatment by scene type) ANOVA conducted on the residual gain scores derived from this measure yielded a significant treatment effect, F (2, 24) = 3.48, $p < .045$. No main effect for scene type (peer vs. adult provocations) emerged; nor was there any interaction. Post hoc analysis revealed that the stress inoculation subjects exhibited significantly less verbal aggression than the no treatment controls ($p < .05$). The mean for the treatment elements condition fell between each, not differing significantly from either. No differences between the three groups were produced on the posttest generalization measure.

Irrational Beliefs Test. None of the three treatment conditions were found to have had a differential impact on the residual gain scores derived from this measure.

Institutional Behavior Ratings. ANOVA's were conducted on the total scores for verbal and physical provocation responses, respectively, on each of the 14 global adjustment items, and on the total global adjustment score. None of the total score analyses produced significant Fs. Two of the individual global-adjustment-item analyses resulted in significant Fs, but these must be interpreted with caution, as one could be expected by chance alone. Post hoc analysis of a main treatment effect on "verbal behavior around peers," F (2, 24) = 5.47, $p < .01$, revealed that both active treatment conditions positively increased their peer interactions in comparison to the no treatment control condition ($p < .05$) but did not differ from each other. Furthermore, post hoc analyses of another main treatment effect on "anxiety in staff interactions," F (2, 24) = 4.01, $p < .032$, suggested that the treatment elements condition resulted in more comfort in comparison with the stress inoculation condition ($p < .05$); the mean for the no treatment condition fell between each, not differing significantly from either.

Experimental Demand Analysis

ANOVA's were conducted on the rating scales given to the two active treatment conditions. No differences emerged on either testing occasion, suggesting that equivalent demands were generated in both conditions.

DISCUSSION

Results of this study support the hypothesis that stress inoculation would produce the most significant improvement in anger management skills of delinquents. Both active treatment conditions were regarded by subjects as credible therapeutic procedures expected to produce equally effective results. Both conditions were effective in reducing the

degree of self-reported angry feelings and the level of self-reported verbal aggression which followed imaginal provocations. Stress inoculation, however, was the only treatment effective in reducing the actual level of verbal aggression exhibited in role play provocations involving another person. Treatment elements and no treatment control groups did not differ on this measure. These findings suggest that, in addition to relaxation and behavior rehearsal, stress inoculation contains specific components (i.e., coping skills and self-instructional training, therapist modeling) which facilitate employment of anger management skills in interpersonal situations.

The hypotheses that treatment would eventuate in significant changes in belief systems, as reflected by the Irrational Beliefs Test, or in the intensity of angry feelings subjects would experience in a variety of provocation situations, as indicated by the anger inventory, were not supported. Neither active treatment produced any changes in reported use of physical aggression; however, no behavioral measures of physical aggression were taken. Thus, it is possible that reduction of physical aggression may be facilitated by procedures different from those effective in modifying verbal aggression, but it is also possible that changes in the frequency of physical aggression simply could not be observed via the measures used in this study.

While there were significant changes in youth workers' ratings of two types of behaviors unrelated to anger management, these data are of questionable validity. At the time the study was conducted there were significant staff shortages within the institution, and workers felt overburdened with their routine work. When asked to complete rating

scales for research purposes, they were minimally cooperative. They voiced concerns that the scales were too detailed and that they did not have time to notice such specific behaviors. Additionally, staff were generally oriented to group control rather than individual treatment, tended to make global judgements of residents' behaviors, and were untrained in behavior observation skills. In the context of these limitations the statistically significant changes in two rating scale items cannot be given much credibility.

It is likely that some measures (e.g., role play generalization scenes) failed to show differences between groups as a consequence of such a small n. Some treatment differences were probably diminished by a lack of follow-up work with subjects between sessions and by exposure to untrained youth workers' beliefs about anger control contradictory to those promoted in treatment. Some staff members modeled aggressive behavior in response to anger provocations from residents; others suggested that most residents were really angry "inside" and needed to learn how to act out their anger overtly as a rehabilitative step. A number of residents informed their therapists that their supervisors seemed to want them to "snap out" rather than control their anger responses.

Other characteristics of the setting may have significantly influenced the outcome. As Repucci and Saunders (1974) have shown, the social psychology of institutional settings often makes life difficult for the investigator who attempts to implement any systematic behavior-change programs. One consequence of staff shortages was an intensification of group control at the expense of contingent consequences for the

behavior of individual residents. Subjects indicated they were experiencing more frequent and intense anger than usual because they perceived a diminishing correspondence between their behavior and consequences administered to them. This situation may have inflated anger and aggression scores and may have made treatment more difficult. On the other hand, since therapists provided consistent individual treatment for the duration of the study, subjects appeared to have established genuine, positive relationships with their therapists. They frequently requested to be seen more than twice weekly, sometimes refused the $1.00-per-session fee, and expressed desires to work on problems in addition to anger control and to see their therapists after treatment had been formally terminated.

These results suggest that individual cognitive-behavioral treatment of anger control problems in institutionalized delinquents may be significantly more effective than the routine group processes in which all residents are involved. In a sense the no treatment control group in this study was not a no treatment condition at all, as all subjects participated in daily group sessions and in interactions with staff whose responsibility is to facilitate behavior change. Anger control difficulties are "treated" by youth workers daily, as they are the people who must confront the problems in vivo. Thus, this study can be described as a comparison of routine institutional treatment with two individualized behavioral approaches.

While delinquent adolescents have been participants in operant treatment programs increasingly frequently (see reviews by Braukman and Fixsen, 1975; Davidson and Seidman, 1974; Stumphauser, 1970), minimal

efforts have been made to broaden the range of behavioral techniques used with these subjects. Perhaps the lack of work with delinquents within a cognitive framework has been based on descriptions of these youths as impulsive and not cognitively oriented (Marohn, Offer, and Ostrov, 1974; Saunders, Reppucci, and Sarata, 1973). If this perception of delinquents is as widespread as is often reported, it is paradoxical that it has not resulted in attempts to apply some of the cognitive techniques developed to teach verbal mediating skills to impulsive children (e.g., Meichenbaum, 1971; Meichenbaum and Goodman, 1969a, 1969b, 1971). These studies have relied extensively on self-instructional training and have demonstrated that impulsive children can learn to slow down their automatic responses. Subjects in the present study responded favorably to self-instructional training, coping skills training, relaxation procedures, and attempts to change directly some of their maladaptive cognitions about themselves and others. These findings imply that stress inoculation may benefit clients traditionally regarded as not cognitively oriented.

Subsequent research might attempt to develop some institutional supports for procedures employed in individual therapy. For example, delinquents with anger management problems might be placed on operant programs which would provide counselor-dispensed reinforcers to subjects for: (1) self-monitoring and recording of angry feelings and aggressive responses; (2) practice of coping skills for a specified time period each day; and, (3) observed attempts to apply skills taught in individual therapy to daily situations in the institution. Kaufman and Wagner's (1972) study employed an operant program appropriate to

maintain gains in individual therapy. Of primary importance is that treatment beliefs of therapists treating subjects individually be compatible with the treatment orientation of the institution staff, or such between-session efforts would be of questionable utility.

TABLE 1

MEANS AND STANDARD DEVIATIONS OF PRETEST, POSTTEST, RESIDUAL GAIN, AND POSTTEST-ONLY SCORES PRODUCED BY EACH TREATMENT CONDITION ON EACH DEPENDENT MEASURE

TREATMENT CONDITION			ANGER INVENTORY	IMAGINAL PROVOCATION TEST					ROLE PLAY
				AR[d]	VA-I[e]	VA-W[f]	PA-I[g]	PA-W[h]	
SI[a]	PRETEST	$\bar{X}$	280.30	8.00	9.70	6.80	8.70	6.70	21.95
		S.D.	47.46	1.80	2.00	3.66	2.61	3.98	1.21
	POSTTEST	$\bar{X}$	232.00	7.30	4.80	5.50	4.10	4.90	9.85
		S.D.	55.15	1.73	2.93	4.46	3.30	3.96	6.07
	RESIDUAL GAIN	$\bar{X}$	-20.40	-0.223	-1.83	1.50	-0.814	-1.04	-3.01
		S.D.	48.89	1.20	2.78	3.97	3.12	3.61	5.82
	POSTTEST ONLY	$\bar{X}$	———	7.00	5.60	5.30	5.00	4.40	11.50
		S.D.	———	2.05	3.72	4.50	3.16	3.69	6.13
TE[b]	PRETEST	$\bar{X}$	290.75	8.90	9.70	6.80	7.50	5.40	18.25
		S.D.	30.47	0.94	3.39	2.79	3.32	3.67	8.04
	POSTTEST	$\bar{X}$	243.50	6.90	6.00	8.20	3.70	7.60	11.70
		S.D.	65.57	1.76	3.35	3.82	3.16	4.52	6.93
	RESIDUAL GAIN	$\bar{X}$	-16.50	-1.02	-0.629	1.20	-0.710	1.97	0.220
		S.D.	69.59	1.58	2.72	4.02	2.61	4.71	5.34
	POSTTEST ONLY	$\bar{X}$	———	8.00	6.38	7.38	6.50	7.88	12.06
		S.D.	———	1.94	3.37	3.12	4.44	3.92	5.88
NT[c]	PRETEST	$\bar{X}$	280.80	7.10	9.20	7.00	7.80	6.70	15.25
		S.D.	55.11	1.45	2.60	3.26	3.72	3.98	7.43
	POSTTEST	$\bar{X}$	290.40	8.20	8.80	7.40	6.10	5.10	13.65
		S.D.	48.59	1.66	2.82	3.44	2.81	2.95	6.67
	RESIDUAL GAIN	$\bar{X}$	37.66	1.18	2.45	0.304	1.52	-0.930	2.78
		S.D.	31.38	1.70	2.05	2.68	2.59	2.41	3.19
	POSTTEST ONLY	$\bar{X}$	———	7.78	7.00	7.56	4.67	6.22	15.44
		S.D.	———	1.23	2.83	3.23	2.98	3.19	5.54

[a]Stress inoculation
[b]Treatment elements
[c]No treatment control
[d]Anger rating
[e]Verbal aggression - in fact
[f]Verbal aggression - would like to
[g]Physical aggression - in fact
[h]Physical aggression - would like to

TABLE 1, CONTINUED

TREATMENT CONDITION			IRRATIONAL BELIEFS TEST	INSTITUTIONAL BEHAVIOR RATINGS VRAP[i]	PRAP[j]	TOTAL GLOBAL	VBAP[k]	ASI[l]
SI	PRETEST	$\bar{X}$	289.50	38.20	27.60	40.10	4.10	2.60
		S.D.	26.29	9.09	11.41	9.29	0.700	1.11
	POSTTEST	$\bar{X}$	302.90	38.10	22.00	41.30	4.61	2.80
		S.D.	25.79	9.49	8.60	9.47	0.830	1.08
	RESIDUAL GAIN	$\bar{X}$	5.50	0.630	0.940	-2.50	0.159	-0.510
		S.D.	25.62	9.46	9.28	8.59	0.918	1.03
	POSTTEST ONLY	$\bar{X}$	———	———	———	———	———	———
		S.D.	———	———	———	———	———	———
TE	PRETEST	$\bar{X}$	292.75	36.50	20.63	41.63	4.13	2.50
		S.D.	21.00	9.19	8.40	11.85	0.778	0.867
	POSTTEST	$\bar{X}$	281.63	38.25	18.75	49.38	4.50	3.88
		S.D.	26.15	9.01	7.63	8.14	0.500	0.310
	RESIDUAL GAIN	$\bar{X}$	-12.19	1.79	-0.575	4.86	0.553	0.601
		S.D.	15.91	9.67	8.57	7.72	0.588	0.542
	POSTTEST ONLY	$\bar{X}$	———	———	———	———	———	———
		S.D.	———	———	———	———	———	———
NT	PRETEST	$\bar{X}$	294.00	39.89	24.67	37.33	3.33	2.89
		S.D.	15.29	11.91	14.04	8.06	1.41	1.55
	POSTTEST	$\bar{X}$	299.33	36.22	19.78	41.00	3.11	3.44
		S.D.	15.79	12.87	8.64	10.59	0.736	0.958
	RESIDUAL GAIN	$\bar{X}$	4.73	-2.28	-0.544	-1.51	-0.669	0.030
		S.D.	16.87	7.85	6.94	10.48	0.754	0.787
	POSTTEST ONLY	$\bar{X}$	———	———	———	———	———	———
		S.D.	———	———	———	———	———	———

[i]Verbal responses to anger provocations

[j]Physical responses to anger provocations

[k]Verbal behavior around peers

[l]Anxiety in staff interactions

REFERENCES

Braukmann, C. J., and Fixsen, D. L. Behavior modification with delinquents. In M. Herson, R. M. Eisler, and P. M. Miller (Eds.), Progress in behavior modification. Vol. 1. New York: Academic Press, 1975.

Brown, G. D., and Tyler, V. O. Time out from reinforcement: A technique for dethroning the "duke" of an institutionalized delinquent group. Journal of Child Psychology and Psychiatry, 1968, 9, 203-211.

Burchard, J. D. Systematic socialization: A programmed environment for the habilitation of antisocial retardates. Psychological Record, 1967, 17, 461-476.

Burchard, J. D., and Tyler, V. O. The modification of delinquent behavior through operant conditioning. Behavior Research and Therapy, 1965, 2, 245-250.

Cronbach, L. J., and Furby, L. How we should measure "change" - or should we? Psychological Bulletin, 1970, 74, 68-80.

Davidson, W. S., and Seidman, E. Studies of behavior modification and juvenile delinquency: A review, methodological critique, and social perspective. Psychological Bulletin, 1974, 81, 998-1011.

Dubois, P. H. Multivariate correlational analysis. New York: Harper and Brothers, 1957.

Fineman, K. R. An operant conditioning program in a juvenile detention facility. Psychological Reports, 1968, 22, 1119-1120.

Goodwin, S. E., and Mahoney, M. J. Modification of aggression through modeling: An experimental probe. Journal of Behavior Therapy and Experimental Psychiatry, 1975, 6, 200-202.

Hackett, G., and Horan, J. J. Stress-inoculation for pain: What's really going on? Paper presented at the annual meeting of the American Educational Research Association, San Francisco, April 1979.

Hackett, G., Horan, J. J., Buchanon, J. D., and Zumoff, P. Improving the exposure component and generalization potential of stress-inoculation for pain. Paper presented at the annual meeting of the American Educational Research Association, Toronto, March, 1978.

Hartman, C. H. Group relaxation training for control of impulsive behavior in alcoholics. Behavior Therapy, 1973, 4, 173-174.

Horan, J. J., Hackett, G., Buchanon, J. D., Stone, C. I., and Demchik-Stone, D. Coping with pain: A component analysis of stress-inoculation. Cognitive Therapy and Research, 1977, 1, 211-221.

Kaufmann, L. M., and Wagner, R. R. Barb: A systematic treatment technique for temper control disorders. Behavior Therapy, 1972, 3, 84-90.

Marohn, R. C., Offer, D., and Ostrov, E. Juvenile delinquents view their impulsivity. American Journal of Psychiatry, 1971, 128, 418-423.

Meichenbaum, D. The nature and modification of impulsive children. Paper presented to the Society for Research in Child Development, Minneapolis, 1971.

Meichenbaum, D. Cognitive-behavior modification. New York: Plenum Press, 1977.

Meichenbaum, D., and Goodman, J. The developmental control of operant motor responding by verbal operants. Journal of Experimental Child Psychology, 1969, 7, 553-565. (a)

Meichenbaum, D., and Goodman, J. Reflection-impulsivity and verbal control of motor behavior. Child Development, 1969, 40, 785-797. (b)

Meichenbaum, D., and Goodman, J. Training impulsive children to talk to themselves: A means of developing self-control. Journal of Abnormal Psychology, 1971, 77, 115-126.

Meichenbaum, D., and Turk, D. The cognitive-behavioral management of anxiety, anger, and pain. In P. O. Davidson (Ed.), The behavioral management of anxiety, depression, and pain. New York: Brunner/Mazel, 1976.

Novaco, R. A treatment program for the management of anger through cognitive and relaxation controls. Unpublished doctoral dissertation, Indiana University, Bloomington, Indiana, 1974.

Novaco, R. Treatment of chronic anger through cognitive and relaxation controls. Journal of Consulting and Clinical Psychology, 1976, 44, 681.

O'Donnell, C. R., and Worell, L. Motor and cognitive relaxation in the desensitiation of anger. Behavior Research and Therapy, 1973, 11, 473-481.

Phillips, E. L. Achievement place: Token reinforcement procedures in a home-style rehabilitation setting for pre-delinquent boys. Journal of Applied Behavior Analysis, 1968, 1, 213-223.

Repucci, N. D., and Saunders, J. T. Social psychology of behavior modification: Problems of implementation in natural settings. In C. M. Franks and G. T. Wilson (Eds.), Annual review of behavior therapy, theory, and practice. Vol. 3. New York: Brunner/Mazel, 1975.

Rimm, D. C., DeGroot, J. C., Boord, P., Heiman, J., and Dillow, P. V. Systematic desensitization of an anger response. Behavior Research and Therapy, 1971, 9, 273-280.

Russell, D. H., and Harper, G. P. Who are our assaultive juveniles? A study of 100 cases. Journal of Forensic Sciences, 1974, 8, 77-92.

Saunders, J. T., Reppucci, N. D., and Sarata, B. P. An examination of impulsivity as a trait characterizing delinquent youth. American Journal of Orthopsychiatry, 1973, 43, 789-795.

Smith, R. E. The use of humor in the counterconditioning of anger responses: A case study. Behavior Therapy, 1973, 4, 576-580.

Stumphauser, J. S. Behavior modification with juvenile delinquents: A critical review. Federal Correctional Institution Technical and Treatment Notes, 1970, 1, 1-22.